Cromemco Software Update Service Note Cromix-4

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Product: Cromix-L and Cromix-S

Version.Release: 11.10

Date production of this version began: June 4, 1982 on 8"
June 4, 1982 on 5"

First serial number with this version: CX1612428 on 8"
CX1711273A on 5"

[Note: Earlier serial numbers may also contain this version. All Cromemco Finished Goods stock was recopied on the above dates.]

SUMMARY

Cromix™ Operating System version 11.10 is now available. This version has new capabilities supporting Cromemco's graphics software, a new 5-1/4" hard disk system, and a new magnetic tape drive system. Several procedures involving mode characteristics have been changed or enhanced. New system calls have been added to the Cromix CDOS Simulator, corresponding to the system calls added to CDOS to permit execution of many programs which run under CP/M* Version 2.2. The complete Cromix Operating System is fully documented in the new June 1982 **Cromix Instruction Manual**, part number 023-4022.

ENHANCEMENTS

Cromix Operating System version 11.10 has color graphics capability. This version supports the Cromemco SDI Graphics Interface hardware, the Cromemco SDI Graphics Software library (SGS), and the Cromemco FontMaster package (FOMR). SGS is an all purpose library of graphics routines for drawing lines and curves and coloring areas. The FontMaster program allows users to define their own graphics character sets and to create color text images using these character sets. For details, please refer to the **SGS-2 Suds Note**, part number 023-9529, and the **SGS-3 Suds Note**, part number 023-9534, and the **Cromix Instruction Manual.**

*CP/M is a trademark of Digital Research.

Cromemco Software Update Service Note
Cromix Version 11.10

The new verion of the Cromix Operating System will support Cromemco's 8" hard disk, as well as the new 5-1/4" hard disk used in conjunction with Cromemco's new WDI-II Disk Controller board. The 5-1/4" hard disk has a capacity of 5-1/2 Mbytes. Version 2.55 or higher of the Init utility is required to initialize a hard disk interfaced by a WDI-II board.

Cromix Operating System version 11.10 will support the new Cromemco magnetic tape system (TDS-3901). This system consists of the tape drive, software, and two interface boards: an IOP, the existing I/O processing board, and a CSP, the new C-Bus serial-to-parallel board interfacing the tape drive and the IOP board.

The TDS uses the industry standard nine track formatted tape. This allows data exchange between Cromemco systems and other systems, including IBM. For backing up information, a standard 10-1/2" reel holding 2400 feet of tape can store approximately 40 Mbytes of data.

CHANGES TO CROMIX.SYS

Old version 11.05

Inode Link Damage

Inode links previously could be made incorrectly if a detached process was killed while waiting for the Quadart driver, QTTY. This has been fixed.

Tape Driver

TP is the new tape driver added to the Cromix Operating System software to support tape drive capabilities. User control of the tape drive is provided through the new version of the Mode utility provided with this release. For more information, see the discussion of **/bin/mode.bin** in the section entitled **CHANGES TO THE UTILITIES.**

Character Drivers

Modifications have been made to the TTY, QTTY, MTTY, LPT, TYP, SLPT, and QSLPT character drivers. They are discussed in the new options added to the Mode utility. Changes or additions have been made to the **modeequ.z80** equate file to correspond to the modifications to the drivers.

Timing Constant

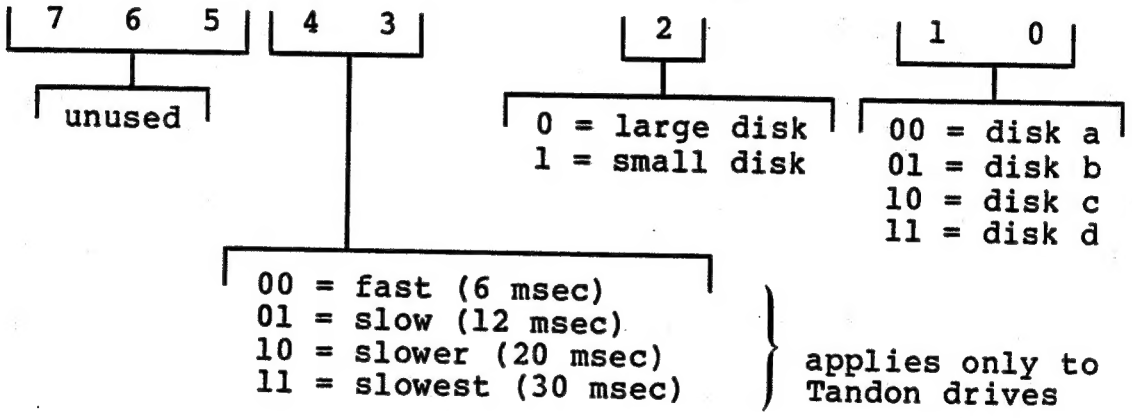
The timing constant for the hard disk drivers was changed to perform more reliably with the 5-1/4" hard disk.

Home Error

In the old version, the drivers for 5" floppies were failing to seek to track 10 and try again to home whenever the floppies encountered a home error. This problem is eliminated in version 11.10.

Minor Device Numbers

Greater control over the small floppy disk drives has been added by expanding the minor device number to include seek speed. The number is derived from eight bits as follows:



The speeds listed for the table above are the drive stepping rates between tracks.

The minor device numbers for small floppies are listed in the table below:

Drive	Speed			
	Fast	Slow	Slower	Slowest
sfda	4	12	20	28
sfdb	5	13	21	29
sfdc	6	14	22	30
sfdd	7	15	23	31

The minor device numbers are listed with their corresponding devices in the **/dev** file. The new version of the Cromix

Operating System is shipped configured for small Tandon floppies at fast speed.

To configure the system for different speeds for the small floppies, you must change the minor device number for the device. This is done by using the Delete and Makdev utilities.

Be sure the devices are unmounted before beginning this procedure. Delete the **/dev** entry for the device which is to be changed using Delete. Reenter the device with its new minor number using Makdev. Refer to the **Cromix Instruction Manual**, part number 023-4022, for details on using Delete and Makdev.

Hidden Sectors

The hidden sectors are the last two sectors on the first track of the diskette. These sectors are left over from composing sectors into blocks at four sectors per block. They are not used to compose any block, so have not been previously accessible. The hidden sectors on a floppy diskette can now be read by seeking to byte 0FFFFFE00h. On large floppies, they are the 25th and 26th sectors. On small floppies, they are the 17th and 18th sectors.

Raw Mode

GTTY now turns off raw mode before asking for login name. This avoids conflicts in cases where raw mode had inadvertently been left on by a previous process.

Process Time Slice

The time slice for a process has been changed from 500 milliseconds to 100 milliseconds.

Shell

A space character is no longer required in the command line after the pipe symbol |.

In previous versions of the Cromix Operating System, CNTRL-C would sometimes abort a detached process. This has been fixed.

CHANGES TO EQUATE FILES

/equ/modeequ.z80

Definitions have been added which reflect new capabilities of the terminal and printer drivers.

/equ/tmodeequ.z80

This is a new equate file containing the definitions for the constants used by the new tape driver.

CHANGES TO THE UTILITIES

/bin/backup.bin 00.08

Old version 00.06
Backup formerly accepted diskettes initialized with either the CDOS or Cromix Operating System format. Now it accepts only diskettes initialized with the Cromix Operating System format.

Backup does not modify dump times.

/bin/dcheck.bin 00.12

Old version 00.10.
This utility has been changed due to the renaming of a routine used in both Dcheck and Boot to avoid name conflicts.

/bin/ddump.bin RB 2.01

Direct Dump is a new utility. Ddump converts and copies data from one file or device to another. It is useful for gaining access to data stored in raw form because the input and output block sizes may be specified.

Options are:

if=pathname or -i pathname	specify input file pathname (default: standard input)
of=pathname or -o pathname	specify output file pathname (default: standard output)
ibs=n	input block size = n bytes
obs=n	output block size = n bytes

cbs=n	conversion buffer size = n bytes (default = 80 bytes)
iskip=n	skip first n input blocks before starting copy
oskip=n	skip first n output blocks before starting copy
icount=n	copy only n input blocks
conv=ascii	convert EBCDIC to ASCII
ebcdic	convert ASCII to EBCDIC
ucase	convert alphabetic characters to upper case
lcase	convert characters to lower case
strip	strip trailing blanks
nostop	do not stop processing on an error

Example: ddump if=/dev/tpl of=filel conv=ascii,lcase,strip

A more detailed explanation of Ddump is available through the Help utility. Type **help ddump.**

/bin/echo.bin RB 00.05

Old version 00.04
Echo is now a relocatable binary program.

/bin/help.bin RB 00.04

Old version RB 00.02
In previous versions, if a user added too many new Help files and the Help program ran out of memory while listing the directory, the program would be aborted. The program has been fixed to read in only as much as it is able and ignore the rest.

/bin/init.com 2.71

Old version 2.21
This utility has been changed to enable the initialization of 5-1/4" hard disks. Init can now label disks initialized for CDOS.

/bin/makfs.bin RB 00.13

Old version 00.11

-r A new option, Restore, has been added. This option creates a superblock and may be used to restore a distorted superblock. Icheck -s must be run after -r to restore the free list. The system must then be rebooted.

Use the -r option **only on Makfs version 00.13 or higher.** Earlier versions will ignore the unrecognized option and proceed with the entire Makfs function. **This procedure could destroy the contents of the disk.**

A new command, **fixsb.cmd** (Fix Superblock), is now available. This command will automatically implement the utilities to restore the superblock. The commands which are implemented are discussed under **/cmd/fixsb.cmd.**

The file **makfs.bin** is now relocatable binary.

/bin/mode.bin RB 1.12

Old version RB 1.01
New options and characteristics have been added to the Mode utility and are briefly listed below. A more detailed explanation is available through the Help utility. Type **help mode.**

More specific error messages have been added to the Mode utility.

The -v option verifies by displaying mode characteristics after changing them.

The following characteristics are tape drive specific and must be preceded by the device name of the tape drive (i.e., TP1):

Block n : This characteristic moves the tape to the nth block within the current tape file. The following example moves to the second block within the current tape file on device TP1:

mode tp1 block 2

BLKSWritten: This characteristic reports the number of blocks of the last tape that were written to the tape device.

EOFclose: If this characteristic is set, a filemark marking the end of a tapefile will automatically be written on the tape when the tape device is closed.

File n: This characteristic moves the tape to the nth file on the tape.

Inblkln: This characteristic reports the byte length of the first block of the last file read from the tape device.

Outblkln n: This characteristic sets and reports the block length to n bytes for files written on a tape device.

REWind: This characteristic rewinds a tape.

UNLOAD: This characteristic unloads a tape.

The following characteristics refer to terminal and printer devices TTY, QTTY, MTTY, LPT, TYP, SLPT, and QSLPT:

BINary: CBreak, RAW, and BINary are parameters of terminal devices TTY, QTTY, and MTTY. If any of these parameters is enabled, any read from the device returns after each input character. These parameters also serve to disable the action of various other parameters.

Margin n: If Margin n set, a printer or terminal device will emit a formfeed if it is within n lines of the bottom of the page.

Break: See BINary.

DELAYcode n: This characteristic sets and reports the amount of delay for TTYS, QTTYS, and MTTYS after outputting the formatting characters NL, TAB, CR, FF, and BS. Type **help mode** for more information.

DIScard: If DIScard is set, the data area allocated for a driver will be discarded as soon as the device is closed. This allows another driver to use the data area in cases where two drivers use the same port address on an interface card.

FFexpand: If FFexpand is set, a formfeed character output to a printer or terminal device is converted to newlines.

HUPenable: If HUPenable is set, a modem connected to a QTTY or MTTY is hung up when the terminal device closes.

SIGHUPall: If SIGHUPall is set, and the modem of a QTTY or MTTY hangs up, the signal SIGHANGUP is sent to all processes controlled by the device.

LCase: If LCase is set, terminal devices TTY, QTTY, and MTTY convert upper case input characters to lower case.

SIGALLchars: The combined states of the modes of SIGALLchars and SIGenable determine how the SIGChar-key/SIGUSER-signal will affect processes. Type **help mode** for more information.

TABexpand: If TABexpand is set, a tab character is converted to spaces.

TANDEM: TANDEM mode is used to allow software handshaking between two Cromix Operating Systems connected by either TU-ART or Quadart asynchronous ports.

WRAParound: If WRAParound is set, an output device will print the remainder of a line extending beyond the page width on a new line. If WRAParound is not set, the remainder of the line will be truncated.

/bin/sim.bin 00.31

Old version 00.27
New System Calls 6, 28 through 36, 40, and 162 have been added and System Call 12 has been revised. These changes enable the CDOS simulator to execute many programs which run under CP/M Version 2.2. For more detailed information please refer to the **CDOS-1 Suds Note**, part number 023-9533.

In 32K Structured Basic, a CNTRL-Z typed from the keyboard would abort Basic. A program not yet saved could thus be lost. This has been fixed. If CNTRL-Z is typed, an error message will appear but the Basic session will continue.

All files previously accessed through Sim had to have read/write access. Now a file may have only read access if there are no programs which write to it. If an attempt is made to write to a file which does not have write access, an access error will be printed on the terminal (by the Cromix Operating System) and an error will be generated to the CDOS write system call (by **sim.bin**).

/bin/spool.bin RB 00.12

Old version RB 00.09
The -h option now outputs a formfeed after the header.

When spool used the Stdin channel, it generated an access error. This has been fixed. For instance, after typing **spool** followed by RETURN, the user may type text on the keyboard. This text will be printed after the user presses **CNTRL-Z** (end of file).

/bin/wboot.bin RB 00.09

Old version 00.05
The file **wboot.bin** is now relocatable binary.

/bin/version.bin 00.09

Old version 00.08
Previously, **version.bin** determined whether a program was relocatable binary (RB) by checking the header of the file, which is 256 bytes long. If the program was checking a file whose length was less than 256 bytes, it could erroneously obtain the RB characteristic information from the file header of the file leftover from a previous check. This problem has been corrected.

/cmd/fixsb.cmd

Fix Superblock is a new command file which implements the -r option of **makfs.bin.** The command file will execute only with the proper version of Makfs. It is called by typing **fixsb devname.** It will execute Makfs -r, followed by Icheck -s and Boot.

/cmd/runqd.cmd

The Runqd utility has been changed to establish the 16FDC TTY1 as the system console, where previously QTTY1 was the system console. This requires the presence of the TTY driver in **cromix.sys.** The memory required by the TTY driver reduces the number of system buffers available from the original ten to about five. If the user wishes to prevent this decrease in available system buffers, the Cromix Operating System must be reconfigured without the TTY drivers. To reconfigure the system, refer to Chapter 6 of the **Cromix Instruction Manual.**

See also **CHANGES TO MULTIPLE PROGRAMS** for related changes to other files.

/etc/sfdboot 00.08

Old version 00.04
Sfdboot has been modified so that, when a home error occurs, the drive will seek to track 10 and seek again to home. Minor device number modifications have also been made. Refer to **CHANGES TO CROMIX.SYS** for more information on these changes.

/etc/login.bin RB 00.02

Old version RB 00.01
The new version changes the time allotment between typing the directory name and the password from 10 seconds to 30 seconds before timeout.

/gen/crogen.bin RB 00.14

Old version RB 00.08
It is now possible to generate a **cromix.sys** which makes the default root device the booting device. Crogen will ask a series of questions concerning the default root device:

> **Default Root Device?** [Yes or No]
>
> A **no** response will end the questioning. As a result, the operating system will ask for the major and minor root device every time the system is booted. A **yes** response will lead to another question:
>
> **Boot Disk?** [Yes or No]
>
> A **yes** response will end the questioning. The operating system will automatically assign the device from which the system was booted as the root device. A **no** response will cause Crogen to ask two more questions:
>
> **Major number?**
> **Minor number?**
>
> Crogen asks you to specify the root device by the major and minor number. This is the end of the questioning. (For more information, see **CHANGES TO MULTIPLE PROGRAMS**, below.)

Crogen will automatically include the timer driver required to run the operating system.

Prompts using the characters [or] now use < or >. This change was made because the character codes which generate the square brackets in the United States are used in other countries to generate foreign characters.

The new version of Crogen allows generation of a Cromix Operating System containing drivers for the SDI High Resolution Graphics Interface and the nine track magnetic tape drive.

CHANGES TO MULTIPLE PROGRAMS

TTY1 Console Under IOP Configuration

In a Cromix system configured for use with an IOP, the new assignment of the system console as TTY1, discussed previously in **/cmd/runqd.cmd**, required changes in the following files:

/etc/iostartup.iop.cmd
/etc/ttys.iop
(Both TTY1 and QTTY1 are enabled devices.)

Default Root Device

The automatic setting of the root device to be the boot device, discussed previously in **/gen/crogen.bin**, required in changes in the following programs:

etc/fdboot 00.08
Old version 00.06

etc/sfdboot 00.08
Old version 00.04

/DEV/xxx, where **xxx** is an entry in the **/dev** file, was not previously recognized when DEV was typed in upper case letters. This has been fixed, and the following programs have been modified:

/bin/cdoscopy.bin 00.15
Old version 00.14

/bin/dcheck.bin 00.12
Old version 00.11

/bin/free.bin 00.09
Old version 00.08

/bin/icheck.bin 00.15
Old version 00.14

/bin/idump.bin 00.06
Old version 00.05

/bin/makfs.bin 00.13
Old version 00.12

/bin/mount.bin 00.13
Old version 00.12

/bin/spool.bin 00.12
Old version 00.11

/bin/unmount.bin 00.11
Old version 00.10

/bin/wboot.bin 00.09
Old version 00.07

RDOS 2.52

Version 02.52 of Cromemco RDOS is available and affects the Cromix Operating System with several enhancements. Briefly, this latest version allows Cromix Operating System users to boot from any floppy disk drive. A ROM-based, real time application program has the ability to boot from any of the four drives. See **Application Note: RDOS 2.52**, part number 023-9042, for details.

IOP MONITOR

Version 03.00 of the IOP Monitor ROM is now available. It offers enhancements and corrections to the original monitor, version 01.00. Users who wish to upgrade to version 03.00 should contact the Cromemco Customer Support department.

KNOWN PROBLEMS

SpellMaster™ Users

Cromix Operating System users who have been using the SpellMaster program with version 11.05 and who want to continue using their user dictionaries which have accrued useful vocabularies should continue using Cromix Operating System version 11.05. Users who want to run the SpellMaster program under version 11.10 must begin with a fresh copy of the **spellcrx.usr** dictionary in their **/usr/pkg/spell** directory after they have updated to version 11.10.

The process to replace the SpellMaster dictionary, which has a file extension of **.usr**, is explained below for those who wish to use version 11.10 of the Cromix Operating System.

First, update to Cromix Operating System version 11.10. Locate the original SpellMaster diskette. The original is on a CDOS formatted diskette. Place this diskette into any drive, for example, drive B. Now, find the pathname of the user dictionaries in your Cromix Operating System directory structure with the command

```
# find / -name "*.usr" -a -print
```

This command should normally find dictionaries in **/usr/pkg/spell** only. Move to the directory in which the user dictionary is located. For example:

```
# d /usr/pkg/spell
```

Now copy the **spellcrx.usr** file from the original diskette in drive B into the current directory. Do this by using the Cdoscopy utility:

```
# cdoscopy -v fdb spellcrx.usr
```

To summarize, the session will look like this:

```
# find / -name "*.usr" -a -print
/usr/pkg/spell/spelltec.usr
# d /usr/pkg/spell
# cdoscopy -v fdb spellcrx.usr
# delete spelltec.usr
# ren spellcrx.usr spelltec.usr
```

VERSION NUMBER SUMMARY

cromix.sys		Version 11.10
Files in /bin		**Version**
access.bin	RB	00.06
backup.bin		00.08
linker.bin		00.13
boot.bin		00.02
cdoscopy.bin		00.15
chowner.bin	RB	00.06
cmpasc.bin		00.05
compare.bin	RB	00.07
copy.bin	RB	00.10
cptree.bin		00.07
day.bin	RB	01.02
dcheck.bin		00.12
ddump.bin	RB	02.01
deltree.bin	RB	00.03
dump.bin	RB	00.10
echo.bin	RB	00.05
ed.bin		01.35
find.bin	RB	00.07
free.bin		00.09
group.bin	RB	00.01

h.bin	RB	00.04
help.bin	RB	00.04
icheck.bin		00.15
idump.bin		00.06
init.com		02.71
input.bin	RB	01.00
l.bin	RB	00.11
mail.bin		00.06
makdev.bin	RB	00.07
makfs.bin	RB	00.13
maklink.bin	RB	00.04
match.bin	RB	00.03
mode.bin	RB	01.12
mount.bin	RB	00.13
move.bin	RB	00.09
msg.bin	RB	00.08
ncheck.bin	RB	00.09
passwd.bin		00.09
patch.bin		00.03
priv.bin	RB	00.07
restore.bin		00.05
root.bin	RB	00.02
screen.bin		01.35
sim.bin		00.31
sort.bin		00.06
spool.bin	RB	00.12
tee.bin	RB	01.02
testinp.bin	RB	01.01
time.bin	RB	00.07
unmount.bin	RB	00.11
usage.bin	RB	00.06
version.bin	RB	00.09
wboot.bin	RB	00.09
who.bin	RB	00.06

Files in /dev/iop	**Version**	
cromix.iop	RB	11.10
ioprun.bin	RB	03.00
tape.iop	RB	11.10

Files in /etc	**Version**	
fdboot		00.08
login.bin	RB	00.02
sfdboot		00.08

Files in /gen	**Version**	
crogen.bin	RB	00.14
default.bin	RB	00.01